

# इंटरनेट

# मानक

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“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 11159-7 (2012): Lubricants, Industrial Oils and Related Products (Class L) – Classification, Part 7: Family C [PCD 3: Petroleum, Lubricants and their Related Products]



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“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”



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IS 11159 (Part 7) : 2012

ISO 6743-6 : 1990

भारतीय मानक

स्नेहक, औद्योगिक तेल एवं संबद्ध उत्पाद  
(श्रेणी एल) — वर्गीकरण

भाग 7 फैमिली सी (गियर)

*Indian Standard*

LUBRICANTS, INDUSTRIAL OILS AND RELATED  
PRODUCTS (CLASS L) – CLASSIFICATION

PART 7 FAMILY C (GEARS)

ICS 75:100

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**BUREAU OF INDIAN STANDARDS**

MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG

NEW DELHI 110002

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Price Group 2

## NATIONAL FOREWORD

This Indian Standard (Part 7) which is identical with ISO 6743-6 : 1990 'Lubricants, industrial oils and related products (class L) — Classification — Part 6: Family C (Gears)' issued by the International Organization for Standardization (ISO) was adopted by the Bureau of Indian Standards on the recommendation of the Petroleum, Lubricants and Their Related Products Sectional Committee and approval of the Petroleum, Coal and Related Products Division Council.

This standard is published in various parts. Other parts in this series are:

- Part 1 Class L
- Part 2 Family A (Total loss system)
- Part 3 Family F (Spindle bearing, bearing and associated clutches)
- Part 4 Family D (Compressors)
- Part 5 Family H (Hydraulic systems)
- Part 6 Family T (Turbines)

The text of ISO Standard has been approved as suitable for publication as an Indian Standard without deviations. Certain conventions are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

- a) Wherever the words 'International Standard' appear referring to this standard, they should be read as 'Indian Standard'.
- b) Comma (,) has been used as a decimal marker while in Indian Standards, the current practice is to use a point (.) as the decimal marker.

In this adopted standard, reference appears to certain International Standards for which Indian Standards also exist. The corresponding Indian Standards, which are to be substituted in their respective places, are listed below along with their degree of equivalence for the editions indicated:

<i>International Standard</i>	<i>Corresponding Indian Standard</i>	<i>Degree of Equivalence</i>
ISO 3448 : 1975 Industrial liquid lubricants — ISO viscosity classification	IS 9466 : 1980 Viscosity classification of industrial liquid lubricants	Technically Equivalent
ISO 6743-0 : 1981 Lubricant, industrial oils and related products (class L) — Classification — Part 0: General	IS 11159 (Part 1) : 1985 General classification of lubricants industrial oils and related products: Part 1 Class L	do
ISO 6743-1 : 1981 Lubricant, industrial oils and related products (class L) — Classification — Part 1: Family A (Total loss systems)	IS 11159 (Part 2) : 1985 General classification of lubricants industrial oils and related products: Part 2 Family A (Total loss systems)	do

The technical committee has reviewed the provision of the following International Standard referred in this adopted standard and has decided that it is acceptable for use in conjunction with this standard:

<i>International Standard</i>	<i>Title</i>
ISO 6743-9 : 1987	Lubricant, industrial oils and related products (class L) — Classification — Part 9: Family X (Greases)

In reporting the results of a test or analysis made in accordance with this standard, if the final value, observed or calculated, is to be rounded off, it shall be done in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'.

*Indian Standard*  
**LUBRICANTS, INDUSTRIAL OILS AND RELATED  
PRODUCTS (CLASS L) – CLASSIFICATION**  
**PART 7 FAMILY C (GEARS)**

## 1 Scope

This part of ISO 6743 establishes the detailed classification of family C (gears) which belongs to class L (Lubricants, industrial oils and related products).

It should be read in conjunction with ISO 6743-0.

This part of ISO 6743 is concerned only with lubricants for industrial gears. Lubricants for motor vehicle gears may be included in a future edition.

To establish this classification, two essential series of parameters have been taken into account, one including the environment and the other considering the tooth operating conditions. These parameters are explained in annex A.

## 2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 6743. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 6743 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 3448:1975, *Industrial liquid lubricants — ISO viscosity classification*.

ISO 6743-0:1981, *Lubricants, industrial oils and related products (class L) — Classification — Part 0: General*.

ISO 6743-1:1981, *Lubricants, industrial oils and related products (class L) — Classification — Part 1: Family A (Total loss systems)*.

ISO 6743-9:1987, *Lubricants, industrial oils and related products (class L) — Classification — Part 9: Family X (Greases)*.

## 3 Explanation of symbols used

**3.1** The detailed classification of family C has been established by defining the categories of products required for the primary applications of gears.

**3.2** Each category is designated by a symbol consisting of a group of three letters, which together constitute a code.

NOTE 1 The first letter of the code (C) identifies the family of the product considered, but the second and third letters, taken separately, have no significance of their own. In order to prevent confusion with the API diesel engine oil code, the letter K is included as the second of the ISO category symbols.

The designation of each category shall be supplemented by the addition of viscosity grades according to ISO 3448.

**3.3** In the present classification system, products are designated in a uniform manner. For example, a particular product may be designated in the complete form, i.e. ISO-L-CKS, or in an abbreviated form, i.e. L-CKS.

## 4 Detailed classification

The detailed classification is shown in table 1.

**Table 1 — Classification of lubricants for gears**

Code letter	General application	Particular application	More specific application	Composition and properties	Symbol ISO-L	Typical applications	Remarks
C	Gears	Enclosed gears	Continuous lubrication by splash circulation or spray	Refined mineral oils with oxidation stability, anti-corrosion (ferrous and non-ferrous metal) and anti-foam properties	CKB	Gears operating under light load	
				Oils of CKB type with enhanced extreme-pressure and anti-wear properties	CKC	Gears operating at a stabilized temperature of oil that remains normal or medium and under high load	See annex A
				Oils of CKC type with enhanced thermal/oxidative stability that permits use at a higher temperature	CKD	Gears operating at a high stabilized temperature of the oil and under high load	
				Oils of CKB type ensuring low coefficient of friction	CKE	Gears operating under high friction (e.g. worm gears)	
				Lubricants with oxidation stability, anti-friction and anti-corrosion (ferrous and non-ferrous) properties usable under extreme temperature conditions (low and high)	CKS	Gears operating at a very low, low or very high stabilized temperature of the fluid and under light load	1) See annex A 2) Categories of products that require high performance may be synthetic or contain synthetic bases that risk to pose the problem of compatibility with some equipment regularly used with mineral oils
				Lubricants of type CKS usable under extreme temperature conditions (low and high) and under high load	CKT	Gears operating at a very low, low or very high stabilized temperature of the fluid and under high load	
			Continuous splash lubrication	Greases with extreme pressure and anti-wear properties	CKG*)	Gears operating under light load	See annex A

Code letter	General application	Particular application	More specific application	Composition and properties	Symbol ISO-L	Typical applications	Remarks
		Open gears may be fitted with safety guards	Intermittent or dip or mechanical application	Products usually of bituminous type with anti-corrosion properties	CKH	Cylindrical or bevel gears operating at medium ambient temperatures and generally under light load	1) See annex A 2) AB oils as defined in ISO 6743-1 may be used for the same applications as CKJ lubricants 3) These products can be used with a volatile diluent for ease of application (in this case, they shall be designated as follows: CKH-DIL or CKJ-DIL)
				Products of CKH type with enhanced extreme-pressure and anti-wear properties	CKJ		
				Greases with improved extreme-pressure, anti-wear and anti-corrosion properties and improved thermal stability	CKL <sup>*)</sup>		
			Intermittent application	Products with improved anti-seizing properties that permit use under extreme load conditions, and products with anti-corrosion properties	CKM	Gears operating occasionally under exceptionally high loads	Products that cannot be sprayed
*) These applications may concern several greases. The grease designation according to ISO 6743-9 shall be indicated by the supplier.							



Annex A  
(informative)

Main parameters governing lubricant selection

To establish this classification, two essential series of parameters have been taken into account:

- the environment;
- the tooth operating conditions (load level and sliding velocity).

These parameters are not the only ones to be considered when a lubricant has to be selected. Nevertheless, due to their importance and for clarification purposes, these parameters have been quantified. The values given in table A.1 and table A.2 below have been shown to assist in making a choice. They should be considered only as guides, however.

Table A.1 — Stabilized temperature of the oil or ambient temperature

Very low	< −34 °C
Low	< −34 °C to −16 °C
Normal	−16 °C to +70 °C
Medium	+70 °C to +100 °C
High	+100 °C to +120 °C
Very high	> +120 °C

Table A.2 — Examples of tooth operating conditions

	Definition
Light load	Load level usually encountered in so-called "lightly loaded" gears with a contact stress generally below 500 MPa (500 N/mm <sup>2</sup> ) and with a maximum sliding velocity ( $v_g$ ) on the tooth surface generally lower than one-third of the pitch line velocity on the working pitch cylinder ( $v$ )
High load	Load level usually encountered in so-called "heavily loaded" gears with a contact stress generally above 500 MPa (500 N/mm <sup>2</sup> ) and with a maximum sliding velocity ( $v_g$ ) possibly higher than one-third of the pitch line velocity on the working pitch cylinder ( $v$ )



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Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Catalogue' and 'Standards: Monthly Additions'.

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### Amendments Issued Since Publication

Amendment No.	Date of Issue	Text Affected

## BUREAU OF INDIAN STANDARDS

### Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002

Telephones: 2323 0131, 2323 3375, 2323 9402

Website: [www.bis.org.in](http://www.bis.org.in)

### Regional Offices:

#### Telephones

Central	: Manak Bhavan, 9 Bahadur Shah Zafar Marg NEW DELHI 110002	{ 2323 7617 2323 3841
Eastern	: 1/14, C.I.T. Scheme VII M, V.I.P. Road, Kankurgachi KOLKATA 700054	{ 2337 8499, 2337 8561 2337 8626, 2337 9120
Northern	: SCO 335-336, Sector 34-A, CHANDIGARH 160022	{ 260 3843 260 9285
Southern	: C.I.T. Campus, IV Cross Road, CHENNAI 600113	{ 2254 1216, 2254 1442 2254 2519, 2254 2315
Western	: Manakalaya, E9 MIDC, Marol, Andheri (East) MUMBAI 400093	{ 2832 9295, 2832 7858 2832 7891, 2832 7892

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